Q1. (2017)

17	**Alternative method 1**		
	50 × 1.2 or 60	M1	oe length of Q May be on the diagram
	50 × x × 0.9 or 45 × x	M1	oe area of P reduced by 10% May be on the diagram
	their 60 × y = their 45 × x or $\frac{y}{x} = \frac{\text{their } 45}{\text{their } 60}$ or $y : x$ = their 45 : their 60 or equivalent ratio to 4: 3 not in simplest form or equivalent fraction to $\frac{4}{3}$ not in simplest form	M1dep	oe dep on M2 M3 $\frac{1.2}{0.9}$
	4 : 3 or 1 : $\frac{3}{4}$ or 1 : 0.75 or $\frac{4}{3}$: 1	A1	

17 cont	**Alternative method 2**		
	50 × 1.2 or 60	M1	oe length of Q May be on the diagram
	Chooses a value for x and reduces area of P by 10%	M1	oe eg (x = 8) 50 × 8 × 0.9
	their 60 × y = their area of P reduced by 10% or equivalent ratio to 4 : 3 not in simplest form or equivalent fraction to $\frac{4}{3}$ not in simplest form	M1dep	oe eg 60y = 50 × 8 × 0.9 or 60y = 360 or (y =) 360 ÷ 60 or 6 dep on M2 M3 $\frac{1.2}{0.9}$
	4 : 3 or 1 : $\frac{3}{4}$ or 1 : 0.75 or $\frac{4}{3}$: 1	A1	

17 cont	**Additional Guidance**	
	Allow 1.33(...) for $\frac{4}{3}$	
	4 : 3 in working with 3 : 4 on answer line	M3A0
	1 : $\frac{45}{60}$	M3A0
	(Alt 1) 50x = 60y × 0.9	M1M0M0A0
	(Alt 1) 50x = 60y × 1.1	M1M0M0A0
	(Alt 1) 45x : 60y Answer 3 : 4	M1M1 M0A0
	(Alt 1) $y : x$ = 3 : 4 Answer 3 : 4	M3A0
	Alt 2 example 50 × 10 = 500 (working not seen for reduction by 10% but completed correctly in next line) 450 ÷ 60 = 7.5 (60 here gains first M1) 10 : 7.5 = 20 : 15	M1M1 M1A0
	Do not allow misreads eg increases length of P by 10% (instead of 20%)	
	Alt 2 Allow choice of x to be 50	

Q2. (2017)

19	**Alternative method 1**		
	192 ÷ (7 + 6 + 11) or 192 ÷ 24 or 8	M1	May be implied
	7 × their 8 or 56 and 6 × their 8 or 48 and 11 × their 8 or 88	M1dep	56 : 48 : 88 is M2
	their 56 (× 1) + their 48 × 2 + their 88 × 3 or 56 + 96 + 264 or 416	M1dep	May use x, $2x$ and $3x$ (any letter)
	532.48 ÷ their 416	M1dep	Allow working in pence
	1.28	A1	
	Alternative method 2		
	7 (× 1) + 6 × 2 + 11 × 3 or 7 + 12 + 33 or 52	M1	May use x, $2x$ and $3x$ (any letter)
	532.48 ÷ their 52 or 10.24	M1dep	Allow working in pence
	192 ÷ (7 + 6 + 11) or 192 ÷ 24 or 8	M1	May be implied
	their 10.24 ÷ their 8	M1dep	dep on M3 oe eg their 10.24 × 7 or 71.68 and their 71.68 ÷ (7 × their 8)
	1.28	A1	
	Additional Guidance		
	(Alt 1) 56 : 96 : 264 with no subsequent addition		M1M1M0M0A0
	532.48 ÷ 24 (= 22.18… or 22.19) with no further valid working		Zero
	532.48 ÷ 192 (= 2.77…) with no further valid working		Zero
	(Alt 1) 56 and 48 and 88 (or correct method leading to them) but not subsequently used		M2
	(Alt 1) 8 (or correct method leading to it) but not subsequently used		M1
	(Alt 2) 10.24 (or correct method leading to it)		M2
	1.28 in working with Answer 71.68 (from 1.28 × 56)		M4A0

Q3. (2018)

3	3 : 2	B1	
	Additional Guidance		

Q4. (2018)

8	**Alternative method 1**		
	22.5(0) and 4 or 27 and 8 or 31.5(0) and 12 or 36 and 16 or 40.5(0) and 20 or 45 and 24 or 30 : 16 or 45 : 24	M1	
	45 and 24 chosen	A1	eg 45 : 24 is the final ratio seen
	6	A1	

8 cont	**Alternative method 2**		
	$18 + 4.5x$ and $4x$ seen or $\frac{18 + 4.5x}{15} = \frac{4x}{8}$	M1	any letter oe sets up correct equation
	$8(18 + 4.5x) = 60x$ or $144 + 36x = 60x$ or $24x = 144$	M1dep	eliminates denominators oe
	6	A1	
	Additional Guidance		
	Answer 6 that is not from incorrect method		M1A1A1
	45 and 24 followed by eg 49.5(0) and 28 (answer not 6)		M1A0A0
	Equivalent ratio to 15 : 8 that is not 30 : 16 or 45 : 24 eg 60 : 32 (answer not 6)		M0A0A0
	Final calculation $\frac{15}{8} \times 24 = 45$ (answer not 6)		M1A1A0

Q5. (2019)

3	5 : 2	B1	
	Additional Guidance		

Q6. (2019)

11	**Alternative method 1**		
	(65% =) $\frac{13}{20}$ or 7 : 13	M1	
	13	A1	must be selected as the answer
	Alternative method 2		
	$(100 - 35) \div 35 \times 7$ or $7 \div 35 \times 100 - 7$ or $20 - 7$	M1	oe eg $35 \div 7 = 5$ and $65 \div 5$
	13	A1	must be selected as the answer
	Alternative method 3		
	$\frac{35}{7} \times n = 100 - 35$ or $5n = 65$	M1	oe equation eg $\frac{7}{n} = \frac{35}{100 - 35}$ or $35n = 455$
	13	A1	must be selected as the answer
	Additional Guidance		
	35 : 65 with no other valid working		M0
	Condone answer £13		M1A1
	Answer 13% or $13n$		M1A0
	65% = 0.65		M0
	Alt 2 $65 \div 35 = 1.9$ $1.9 \times 7 = 13.3$ (evidence of premature approximation) Answer 13		M1 A0
	Alt 2 $65 \div 35 = 1.9$ $1.9 \times 7 = 13$ (assume full calculator value used)		M1 A1

Q7. (2019)

18	(b : g =) 4 : 1 or (b : w =) 6 : 10 or states a number of blue discs that is four times the number of green discs or states a number of blue discs and a number of white discs that are in the ratio 3 : 5 (not 3 and 5) or $b = 4g$ or $\frac{b}{w} = \frac{3}{5}$	M1	oe ratio or equation eg (b : g =) 3 : 0.75 or 4 blue 1 green or 6 blue 10 white or $5b = 3w$ do not allow (b : w =) 3 : 5
	Three numbers of the form $12n$, $3n$ and $20n$ where $n > 0$ or unsimplified fraction equivalent to $\frac{32}{35}$	A1	any order may be seen in a ratio or as numbers of discs eg 12 : 3 : 20 or 100 15 60 or 3 0.75 5 or 4 : 1 : $\frac{20}{3}$ or $\frac{12+20}{12+3+20}$ or $\frac{3+5}{3+0.75+5}$ or $\frac{8}{8.75}$ or $\frac{b+\frac{5}{3}b}{b+\frac{5}{3}b+\frac{1}{4}b}$ or $\frac{\frac{8}{3}b}{\frac{35}{12}b}$
	$\frac{32}{35}$ or 0.91(4…) or 91.(4…)%	A1	oe fraction eg $\frac{64}{70}$

18 cont	**Additional Guidance**	
	Ignore conversion of a correct fraction to a decimal or percentage	
	Ignore incorrect simplification of a correct fraction	
	Answer 32 : 35	M1A1A0
	Final A1 fraction answers must be $\frac{\text{integer}}{\text{integer}}$	
	1 : 4 only scores M1 if indicated as g : b	
	10 : 6 only scores M1 if indicated as w : b	
	1st M1 may be embedded eg1 b : g : w = 4 : 1 : 10 eg2 b : g : w = 6 : 3 : 10	 M1 M1
	Condone 4b : g as an indication of 4 blue and 1 green etc	

Q8. (2020)

Q	Answer	Mark	Comments
1	$x + 4x \equiv 5x$	B1	
	Additional Guidance		

Q9. (2020)

Q	Answer	Mark	Comments
8	40 (women) and 44 (men) and No or 40 : 44 and No or 84 and No or 8 (women leave) and 2 (men arrive) and No	B2	oe B1 40 (women) and 44 (men) or 40 : 44 or 84 or 8 (women leave) and 2 (men arrive)
	Additional Guidance		
	NB 84 from incorrect working eg 41 + 43 = 84		B0
	For B1 the values may be seen among others eg1 20 : 22 30 : 33 40 : 44 50 : 55 eg2 21, 42, 63, 84, 105, … eg3 10, 20, 30, 40, 50, … and 11, 22, 33, 44, 55, … eg4 $\frac{44}{84}$ (implies 84)		B1
	For B2 the value(s) must be chosen by eg circling or a list stopping at that point and No must be indicated		

Q10. (2021)

Q	Answer	Mark	Comments
2	1 : 2	B1	

Q11. (2022)

16 Amol owns a sandwich shop.

The shop is open from Monday to Saturday.

In June, Amol sold 3000 sandwiches.

(A)

Q	Answer	Mark	Comments
16(a)	Valid criticism of method indicating or implying that 30 is incorrect	B1	eg the shop was open for fewer than 30 days
	Additional Guidance		
	Valid criticism with non-contradictory statements	B1	
	Contradictory statements	B0	
	30 should be 26	B1	
	The answer is 115 (allow 116 or 115.4 or 115.38…)	B1	
	30 should be 25	B1	
	The answer is 120	B1	
	30 should be 24 (condone)	B1	
	The answer is 125 (condone)	B1	
	The answer is more than 100	B1	
	The shop wasn't open for 30 days	B1	
	He didn't work every day in June	B1	
	The shop was shut on Sundays	B1	
	He is open 6 days a week	B1	
	The shop isn't open every day	B1	
	He should divide by 31	B0	
	He doesn't work weekends	B0	
	There aren't 30 days in June	B0	
	Not every month has 30 days	B0	
	30 should be 27	B0	
	The answer is less than 100	B0	

(B)

Q	Answer	Mark	Comments
16(b)	**Alternative method 1**		
	3000 ÷ (9 + 4 + 7) or 3000 ÷ 20 or 150	M1	oe implied by 1350 or 600 or 1050 or 358.5(0) or 283.5(0)
	9 × 2.39 or 21.51 or 4 × 1.89 or 7.56 or 29.07	M1	oe may be embedded or implied eg 9 × 2.39 × their 150 or 4 × 1.89 × their 150 their 150 can be any number 3226.5(0) or 1134 or 4360.5(0) score M1M1
	(6660 − 9 × 2.39 × their 150 − 4 × 1.89 × their 150) ÷ (7 × their 150) or (6660 − 3226.5(0) − 1134) ÷ 1050 or (6660 − 4360.5(0)) ÷ 1050 or 2299.5(0) ÷ 1050	M1dep	oe eg (6660 − 9 × 2.39 × their 150 − 4 × 1.89 × their 150) ÷ (3000 − 9 × their 150 − 4 × their 150) or $\frac{219}{100}$ dep on M1M1 their 150 must be from 1st M1
	2.19	A1	

16(b) cont	**Alternative method 2**		
	3000 ÷ (9 + 4 + 7) or 3000 ÷ 20 or 150	M1	oe implied by 1350 or 600 or 1050 or 358.5(0) or 283.5(0)
	9 × 2.39 or 21.51 or 4 × 1.89 or 7.56 or 29.07	M1	oe may be embedded or implied eg 9 × 2.39 × their 150 or 4 × 1.89 × their 150 their 150 can be any number 3226.5(0) or 1134 or 4360.5(0) score M1M1
	$\left(\frac{6660}{\text{their } 150} - 9 \times 2.39 - 4 \times 1.89\right) \div 7$ or (44.4(0) – 21.51 – 7.56) ÷ 7 or 15.33 ÷ 7	M1dep	oe eg (44.4(0) – 29.07) ÷ 7 or $\frac{219}{100}$ dep on M1M1 their 150 must be from 1st M1
	2.19	A1	
	Additional Guidance		
	Up to M1M1 may be awarded for correct work with no, or incorrect answer, even if this is seen amongst multiple attempts		

Q12. (2023)

Q	Answer	Mark	Comments
1	$\frac{30}{12}$ or 2.5	B1	oe fraction, mixed number or decimal eg $\frac{5}{2}$ or $2\frac{1}{2}$
	Additional Guidance		
	Ignore simplification or conversion attempt after correct answer seen eg $\frac{30}{12}$ in working with 2.6 on answer line	B1	
	30 ÷ 12 with no further correct work	B0	

Q13. (2024)

Q	Answer	Mark	Comments
21	**Alternative method 1: uses total and proportion in S with W**		
	4480 × $\frac{9}{7}$ or 5760	M1	oe total in S with W eg 640 × 9
	$1-\frac{1}{4}-\frac{3}{10}$ or $\frac{9}{20}$	M1	oe proportion in S with W eg 0.45 or 45%
	their 5760 ÷ their $\frac{9}{20}$	M1dep	oe full method dep on M2
	12 800	A1	
	Alternative method 2: uses total in S with W and total in N with E		
	4480 × $\frac{9}{7}$ or 5760	M1	oe total in S with W eg 640 × 9
	4480 × $\frac{11}{7}$ or 7040	M1	oe total in N with E eg 640 × 11
	their 5760 + their 7040	M1dep	oe full method eg 640 × 20 dep on M2
	12 800	A1	
	Alternative method 3: sets up an equation		
	4480 × $\frac{9}{7}$ or 5760	M1	oe total in S with W eg 640 × 9
	$\frac{1}{4}x+\frac{3}{10}x+$ their $5760=x$	M1dep	oe equation in any variable eg $10x+12x+230\,400=40x$
	their 5760 ÷ $\left(1-\frac{1}{4}-\frac{3}{10}\right)$	M1dep	oe full method eg 230 400 ÷ 18
	12 800	A1	
21 cont	**Alternative method 4: works out proportion in W or proportion in S**		
	$1-\frac{1}{4}-\frac{3}{10}$ or $\frac{9}{20}$	M1	oe proportion in S with W eg 0.45 or 45%
	$\frac{7}{9}$ × their $\frac{9}{20}$ or $\frac{7}{20}$ or $\frac{2}{9}$ × their $\frac{9}{20}$ or $\frac{2}{20}$	M1dep	oe proportion in W eg 0.35 or 35% eg $\frac{7}{7+2}$ × their $\frac{9}{20}$ or oe proportion in S eg 0.1 or 10% eg $\frac{2}{7+2}$ × their $\frac{9}{20}$
	4480 ÷ their $\frac{7}{20}$ or 4480 × $\frac{2}{7}$ ÷ their $\frac{2}{20}$	M1dep	oe full method eg 640 × 20
	12 800	A1	
	Additional Guidance		
	Up to M2 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	Proportions can be percentages but in calculations values must be used eg Alt 1 5760 ÷ 45% is awarded M2 but cannot be awarded the 3rd M1 unless $\frac{9}{20}$ or 0.45 is subsequently used correctly		